ALTER

Step 1



E-001105

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BAY-DELTA
PROGRAM

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# Memorandum

Date: August 6, 1997

To: CALFED Policy Group

From: Lester A. Snow
Executive Director

Subject: Recommendations of Alternatives to Eliminate During Narrowing Process

## Summary

The intent of the alternative narrowing step is twofold: (1) eliminate or modify those alternatives that have technical problems; and (2) reduce the number of alternatives that achieve the same conveyance function.

Five alternatives were presented for possible elimination to the Program Coordination Team (PCT) and the Bay-Delta Advisory Council (BDAC). These included alternatives with pipeline, chain-of-lakes, multiple in-Delta intakes, and western Delta conveyance options.

The five were identified using the following criteria:

- If necessary, the alternative was modified to remove any technical problems.
- An alternative was identified that had a functionally equivalent conveyance. (That is a conveyance that would meet the Program objectives approximately the same and achieve the same Delta conveyance function).
- Using engineering/technical and cost evaluations, a comparison was made between the Delta conveyance of both alternatives. Adverse impacts of each alternative were compared. If the one alternative has significantly higher costs for conveyance and/or greater adverse impacts, it was considered not practicable and was eliminated from further consideration.

The table below summarizes the alternatives considered. Each alternative is labeled if it was modified to remove technical problems, had major adverse impacts, was compared to a functionally equivalent conveyance, and/or utilized costs in the recommendation. The comparison column shows the alternative compared against and the conveyance cost difference. For example, alternative 3C, with a pipeline conveyance, was compared with alternative 3A, with an open canal conveyance, with 3C conveyance costing $1.2 billion more than 3A. Alternative 3F was not compared to another alternative. Rather, it was incorporated into a more comprehensive alternative 3I.

| Alt | Conveyance | Tech Mod | Major Impacts | Func Equiv. | Costs | Comparison |
|---|---|---|---|---|---|---|
| 3C | 5,000 cfs Pipeline | | | X | X | Alt 3A + $1.2B |
| 3D | 5,000 cfs Pipeline | | | X | X | Alt 3B + $1.2B |
| 3F | Chain-of-Lakes | X | X | X | X | Alt 3E + $0.7B |
| 2C | Multiple in-Delta Intakes | X | | | X | Included in Alt 3I |
| 3G | Ship Channel | | | X | X | Alt 3B + $1.4B |

The Program Coordination Team (PCT) and the Bay-Delta Advisory Council (BDAC) both recommended retaining the pipeline options in alternatives 3C and 3D, and eliminating the remainder ( 3F, 2C, and 3G) from consideration. The Program staff agrees with this recommendation.

**Action Item**

The CALFED Policy Group should affirm the narrowing process used to eliminate alternatives and that the Program eliminate alternatives 3F, 2C, and 3G from further consideration.

**Detailed Discussion**

Seventeen alternatives have been developed to meet Program objectives for the Bay-Delta system. Each alternative includes the same programs for ecosystem restoration, water quality, water use efficiency, and levee system integrity. The alternatives differ primarily in how they convey water through or around the Delta and the storage included with each.



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For the narrowing process the primary focus was the conveyance options used in each alternative. Most of the alternatives have a unique conveyance configuration that can be compared and evaluated in the narrowing process. Current recommendations from technical work groups, modeling results, prefeasibility studies, preliminary information from impact analysis and other information was used in the evaluation. The following criteria were used in the narrowing process:

**Identify and eliminate technical problems** (technical problems not evident when the alternatives were formulated and which severely limit an alternative's success);

- Identify alternatives with engineering/technical problems which must be resolved for the alternatives to proceed.
- Modify each alternative, if possible, to remove the technical problems.
- If modifications to the alternative cannot solve the problem, the alternative is not practicable and will be eliminated.

**Reduce the number of alternatives** (that achieve the same Delta conveyance function);

- Identify alternatives that meet Program objectives approximately the same and achieve the same Delta conveyance function.
- Use engineering/technical and cost evaluations to compare the Delta conveyance. Consider adverse impacts of each alternative. If one alternative has significantly higher costs for conveyance and/or greater adverse impacts, it is not practicable and will be eliminated from further consideration.

Using these criteria, the Program staff evaluated the conveyance options of the seventeen alternatives and concluded that five alternatives could be considered for elimination (alternatives 3C, 3D, 3F, 2C, and 3G). *Attached are the evaluations for each of the five alternatives.* These evaluations include the following information:

- A summary description of the alternative.
- Modifications to remove technical problems, if any.
- Comparison to an alternative with functionally equivalent conveyance features.
- Cost comparison.
- Other considerations.
- Recommendation.
- Figure of the conveyance option.

The five alternatives were presented for possible elimination to the Program Coordination Team (PCT) and the Bay Delta Advisory Council (BDAC). The key issues discussed at each meeting are summarized below:

**Overall narrowing process:** The PCT and BDAC were concerned that the benefits were not quantified in enough detail to make a judgement if the conveyances in the alternatives were functionally equivalent for comparison purposes. There was a concern that the Program may eliminate an alternative solely on cost and an unidentified opportunity may be screened out. Some felt that the operation and maintenance costs should be included and a financial analysis made before a comparison could be made.

There was agreement by the PCT and BDAC that: (1) the narrowing process could be applied to those alternatives where the difference in capital cost was great enough to overshadow any operation and maintenance cost difference; (2) in three alternatives (3F, 2C, and 3G) the staff analyses capture the major opportunities, impacts, and costs of the conveyance options; and (3) a financial analysis was premature and more appropriate at the end of the evaluation process.

**Alternative 3C and 3D**: There were no technical problems or major adverse impacts identified with the pipeline options included in alternatives 3C and 3D. The environmental impacts of both the pipeline and canal options could be mitigated so that the differences between the impacts are slight. The pipeline costs two to three times that of the canal. Because of this high cost difference between the pipeline and the canal, the pipeline, if implemented, may provide more of a assurance against its expansion in the future, even though expansion of both conveyance options would be expensive and require extensive environmental permits.

Both the PCT and BDAC recommended that these pipeline conveyance alternatives not be eliminated from further analysis for the reasons given the overall narrowing process above. There were strong feelings that the true environmental benefits and costs had not been quantified in enough detail. Detailed analysis of seepage, operation and maintenance cost, seismic protection, and assurances against future expansion should be completed before a comparison made. BDAC recommended that if there is any chance that there would be greater environmental benefits derived from the pipeline options, retain the alternatives for further analysis.

**Alternative 3F**: This alternative was modified to consolidated and move the intake to a more technically feasible location. The major remaining impacts were; (1) this alternative would impact 37,000 acres on in-Delta agriculture land, ecosystem habitat, and future habitat restoration areas, and (2) there was high uncertainty of the impacts on drinking water quality caused by TOC from the peat soils in the lake areas. The alternative was compared to alternative 3E that could provide the functionally equivalent conveyance and in-Delta operational storage while impacting half the acreage, and allowing operationally flexibility to manage the TOC problem. The cost of 3E was $700 million less than 3F.

Because of the large impacted Delta acreage, the uncertainty of water quality, possible seepage problems on adjacent lands, and the cost both the PCT and BDAC recommended that the Program drop this alternative.

**Alternative 2C**: To limit the possible predation problems in the three in-Delta isolated canals included this alternative, fish screens were added to the intakes of each canal. This increased the cost of the alternative. Even with the screened intakes and the flexibility of using real-time monitoring to manage diversions from different locations in the Delta, the alternative is very expensive and still draws Sacramento River water across the Delta continuing some of the same anadromous fishery problems. This same conveyance is included in alternative 3I which has other features that would make this conveyance option more flexible and effective.

BDAC expressed that this alternative may cause water quality problems in the south Delta and doubted that there is available water from the San Joaquin for the eastern diversion. BDAC recommended that this alternative be dropped.

In the PCT, USEPA recommended alternative 2C be integrated into a more comprehensive alternative 3I and that the analysis for 3I should be structured so that different combinations of intake location and size be evaluated. The USEPA also recommended that in-Delta storage be added to alternative 3I. They also suggested that a clarification be made as to why screens are necessary at all diversion points and if South Delta barriers are needed in alternative 3I. The PCT recommended that 2C be eliminated and the concept evaluated in alternative 3I.

**Alternative 3G:** There were no major technical problems or adverse impacts identified with this alternative. It was compared to a shorter conveyance route of the open canal in alternative 3B. The intake for alternative 3G is further upstream from the in-Delta species habitat than alternative 2B. However, given that the in-Delta species only move up to both locations during extreme dry years, there is little difference in benefits to in-Delta species. Alternative 3G has the water quality benefit of being upstream of the Sacramento Regional Waste Water Treatment Plant(WWTP), while the alternatives 3B intake is located downstream of the plant. To make the water quality benefits comparable between the two alternatives the cost of extending the outfall of the WWTP downstream of the alternative 3B intake was included in alternative 3B. The cost of alternative 3G was still three times of alternative 3B.

Both the PCT and BDAC agreed that the cost differential substantially out ways the minor tradeoffs in benefits of this conveyance option and that alternative 3G are eliminated from further consideration.

**Recommendation**

The Program staff agrees with the recommendation of PCT and BDAC to drop alternatives 3F, 2C, and 3G from further consideration and to preform further analysis on the alternatives 3C and 3D.